RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/567,282
Source: IFW
Date Processed by STIC: 2/13/06

ENTERED

IFWP

RAW SEQUENCE LISTING DATE: 02/13/2006
PATENT APPLICATION: **US/10/567,282** TIME: 12:47:48

Input Set : **E:\9301-237-999.txt**
Output Set: **N:\CRF4\02132006\J567282.raw**

```
4 <110> APPLICANT: Schadt, Eric E.
5       Monks, Stephanie A.
7 <120> TITLE OF INVENTION: COMPUTER SYSTEMS AND METHODS FOR
8       INFERRING CASUALITY FROM CELLULAR CONSTITUENT ABUNDANCE DATA
11 <130> FILE REFERENCE: 9301-237-228
C--> 13 <140> CURRENT APPLICATION NUMBER: US/10/567,282
C--> 14 <141> CURRENT FILING DATE: 2006-02-03
16 <150> PRIOR APPLICATION NUMBER: 60/575,499
17 <151> PRIOR FILING DATE: 2004-05-28
19 <150> PRIOR APPLICATION NUMBER: 60/497,470
20 <151> PRIOR FILING DATE: 2003-08-21
22 <150> PRIOR APPLICATION NUMBER: 60/492,682
23 <151> PRIOR FILING DATE: 2003-08-05
25 <160> NUMBER OF SEQ ID NOS: 24
27 <170> SOFTWARE: FastSEQ for Windows Version 4.0
29 <210> SEQ ID NO: 1
30 <211> LENGTH: 572
31 <212> TYPE: PRT
32 <213> ORGANISM: homo sapiens polypeptide
34 <220> FEATURE:
35 <223> OTHER INFORMATION: malic enzyme ME1
37 <400> SEQUENCE: 1
38 Met Glu Pro Glu Ala Pro Arg Arg Arg His Thr His Gln Arg Gly Tyr
39  1               5                  10                  15
40 Leu Leu Thr Arg Asn Pro His Leu Asn Lys Asp Leu Ala Phe Thr Leu
41             20                  25                  30
42 Glu Glu Arg Gln Gln Leu Asn Ile His Gly Leu Leu Pro Pro Ser Phe
43         35                  40                  45
44 Asn Ser Gln Glu Ile Gln Val Leu Arg Val Val Lys Asn Phe Glu His
45     50                  55                  60
46 Leu Asn Ser Asp Phe Asp Arg Tyr Leu Leu Leu Met Asp Leu Gln Asp
47 65                  70                  75                  80
48 Arg Asn Glu Lys Leu Phe Tyr Arg Val Leu Thr Ser Asp Ile Glu Lys
49                 85                  90                  95
50 Phe Met Pro Ile Val Tyr Thr Pro Thr Val Gly Leu Ala Cys Gln Gln
51             100                 105                 110
52 Tyr Ser Leu Val Phe Arg Lys Pro Arg Gly Leu Phe Ile Thr Ile His
53         115                 120                 125
54 Asp Arg Gly His Ile Ala Ser Val Leu Asn Ala Trp Pro Glu Asp Val
55     130                 135                 140
56 Ile Lys Ala Ile Val Val Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly
57 145                 150                 155                 160
58 Asp Leu Gly Cys Asn Gly Met Gly Ile Pro Val Gly Lys Leu Ala Leu
```

RAW SEQUENCE LISTING DATE: 02/13/2006
PATENT APPLICATION: **US/10/567,282** TIME: 12:47:48

Input Set : **E:\9301-237-999.txt**
Output Set: **N:\CRF4\02132006\J567282.raw**

```
59                  165                 170                 175
60 Tyr Thr Ala Cys Gly Gly Met Asn Pro Gln Glu Cys Leu Pro Val Ile
61              180                 185                 190
62 Leu Asp Val Gly Thr Glu Asn Glu Glu Leu Leu Lys Asp Pro Leu Tyr
63          195                 200                 205
64 Ile Gly Leu Arg Gln Arg Arg Val Arg Gly Ser Glu Tyr Asp Asp Phe
65      210                 215                 220
66 Leu Asp Glu Phe Met Glu Ala Val Ser Ser Lys Tyr Gly Met Asn Cys
67 225                 230                 235                 240
68 Leu Ile Gln Phe Glu Asp Phe Ala Asn Val Asn Ala Phe Arg Leu Leu
69                  245                 250                 255
70 Asn Lys Tyr Arg Asn Gln Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly
71              260                 265                 270
72 Thr Ala Ser Val Ala Val Ala Gly Leu Leu Ala Ala Leu Arg Ile Thr
73          275                 280                 285
74 Lys Asn Lys Leu Ser Asp Gln Thr Ile Leu Phe Gln Gly Ala Gly Glu
75      290                 295                 300
76 Ala Ala Leu Gly Ile Ala His Leu Ile Val Met Ala Leu Glu Lys Glu
77 305                 310                 315                 320
78 Gly Leu Pro Lys Glu Lys Ala Ile Lys Lys Ile Trp Leu Val Asp Ser
79                  325                 330                 335
80 Lys Gly Leu Ile Val Lys Gly Arg Ala Ser Leu Thr Gln Glu Lys Glu
81              340                 345                 350
82 Lys Phe Ala His Glu His Glu Glu Met Lys Asn Leu Glu Ala Ile Val
83          355                 360                 365
84 Gln Glu Ile Lys Pro Thr Ala Leu Ile Gly Val Ala Ala Ile Gly Gly
85      370                 375                 380
86 Ala Phe Ser Glu Gln Ile Leu Lys Asp Met Ala Ala Phe Asn Glu Arg
87 385                 390                 395                 400
88 Pro Ile Ile Phe Ala Leu Ser Asn Pro Thr Ser Lys Ala Glu Cys Ser
89                  405                 410                 415
90 Ala Glu Gln Cys Tyr Lys Ile Thr Lys Gly Arg Ala Ile Phe Ala Ser
91              420                 425                 430
92 Gly Ser Pro Phe Asp Pro Val Thr Leu Pro Asn Gly Gln Thr Leu Tyr
93          435                 440                 445
94 Pro Gly Gln Gly Asn Asn Ser Tyr Val Phe Pro Gly Val Ala Leu Gly
95      450                 455                 460
96 Val Val Ala Cys Gly Leu Arg Gln Ile Thr Asp Asn Ile Phe Leu Thr
97 465                 470                 475                 480
98 Thr Ala Glu Val Ile Ala Gln Gln Val Ser Asp Lys His Leu Glu Glu
99                  485                 490                 495
100 Gly Arg Leu Tyr Pro Pro Leu Asn Thr Ile Arg Asp Val Ser Leu Lys
101             500                 505                 510
102 Ile Ala Glu Lys Ile Val Lys Asp Ala Tyr Gln Glu Lys Thr Ala Thr
103         515                 520                 525
104 Val Tyr Pro Glu Pro Gln Asn Lys Glu Ala Phe Val Arg Ser Gln Met
105     530                 535                 540
106 Tyr Ser Thr Asp Tyr Asp Gln Ile Leu Pro Asp Cys Tyr Ser Trp Pro
107 545                 550                 555                 560
```

RAW SEQUENCE LISTING DATE: 02/13/2006
PATENT APPLICATION: **US/10/567,282** TIME: 12:47:48

Input Set : **E:\9301-237-999.txt**
Output Set: **N:\CRF4\02132006\J567282.raw**

```
108 Glu Glu Val Gln Lys Ile Gln Thr Lys Val Asp Gln
109                 565                 570
112 <210> SEQ ID NO: 2
113 <211> LENGTH: 572
114 <212> TYPE: PRT
115 <213> ORGANISM: mus musculus polypeptide
117 <220> FEATURE:
118 <223> OTHER INFORMATION: Mod1
120 <400> SEQUENCE: 2
121 Met Glu Pro Arg Ala Pro Arg Arg Arg His Thr His Gln Arg Gly Tyr
122  1               5                  10                  15
123 Leu Leu Thr Arg Asp Pro His Leu Asn Lys Asp Leu Ala Phe Thr Leu
124             20                  25                  30
125 Glu Glu Arg Gln Gln Leu Asn Ile His Gly Leu Leu Pro Pro Cys Ile
126         35                  40                  45
127 Ile Ser Gln Glu Leu Gln Val Leu Arg Ile Ile Lys Asn Phe Glu Arg
128     50                  55                  60
129 Leu Asn Ser Asp Phe Asp Arg Tyr Leu Leu Leu Met Asp Leu Gln Asp
130 65                  70                  75                  80
131 Arg Asn Glu Lys Leu Phe Tyr Ser Val Leu Met Ser Asp Val Glu Lys
132                 85                  90                  95
133 Phe Met Pro Ile Val Tyr Thr Pro Thr Val Gly Leu Ala Cys Gln Gln
134             100                 105                 110
135 Tyr Ser Leu Ala Phe Arg Lys Pro Arg Gly Leu Phe Ile Ser Ile His
136         115                 120                 125
137 Asp Lys Gly His Ile Ala Ser Val Leu Asn Ala Trp Pro Glu Asp Val
138     130                 135                 140
139 Val Lys Ala Ile Val Val Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly
140 145                 150                 155                 160
141 Asp Leu Gly Cys Asn Gly Met Gly Ile Pro Val Gly Lys Leu Ala Leu
142                 165                 170                 175
143 Tyr Thr Ala Cys Gly Gly Val Asn Pro Gln Gln Cys Leu Pro Ile Thr
144             180                 185                 190
145 Leu Asp Val Gly Thr Glu Asn Glu Glu Leu Leu Lys Asp Pro Leu Tyr
146         195                 200                 205
147 Ile Gly Leu Arg His Arg Arg Val Arg Gly Pro Glu Tyr Asp Ala Phe
148     210                 215                 220
149 Leu Asp Glu Phe Met Glu Ala Ala Ser Ser Lys Tyr Gly Met Asn Cys
150 225                 230                 235                 240
151 Leu Ile Gln Phe Glu Asp Phe Ala Asn Arg Asn Ala Phe Arg Leu Leu
152                 245                 250                 255
153 Asn Lys Tyr Arg Asn Lys Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly
154             260                 265                 270
155 Thr Ala Ser Val Ala Val Ala Gly Leu Leu Ala Ala Leu Arg Ile Thr
156         275                 280                 285
157 Lys Asn Lys Leu Ser Asp Gln Thr Val Leu Phe Gln Gly Ala Gly Glu
158     290                 295                 300
159 Ala Ala Leu Gly Ile Ala His Leu Val Val Met Ala Met Glu Lys Glu
160 305                 310                 315                 320
```

RAW SEQUENCE LISTING DATE: 02/13/2006
PATENT APPLICATION: **US/10/567,282** TIME: 12:47:48

Input Set : **E:\9301-237-999.txt**
Output Set: **N:\CRF4\02132006\J567282.raw**

```
161 Gly Leu Ser Lys Glu Asn Ala Arg Lys Lys Ile Trp Leu Val Asp Ser
162                 325                 330                 335
163 Lys Gly Leu Ile Val Lys Gly Arg Ala Ser Leu Thr Glu Glu Lys Glu
164             340                 345                 350
165 Val Phe Ala His Glu His Glu Glu Met Lys Asn Leu Glu Ala Ile Val
166         355                 360                 365
167 Gln Lys Ile Lys Pro Thr Ala Leu Ile Gly Val Ala Ala Ile Gly Gly
168     370                 375                 380
169 Ala Phe Thr Glu Gln Ile Leu Lys Asp Met Ala Ala Phe Asn Glu Arg
170 385                 390                 395                 400
171 Pro Ile Ile Phe Ala Leu Ser Ser Pro Thr Ser Lys Ala Glu Cys Ser
172                 405                 410                 415
173 Ala Asp Glu Cys Tyr Lys Val Thr Lys Gly Arg Ala Ile Phe Ala Ser
174             420                 425                 430
175 Gly Ser Pro Phe Asp Pro Val Thr Leu Pro Asp Gly Arg Thr Leu Phe
176         435                 440                 445
177 Pro Gly Gln Gly Asn Asn Ser Tyr Val Phe Pro Gly Val Ala Leu Gly
178     450                 455                 460
179 Val Val Ala Cys Gly Leu Arg His Ile Asp Asp Lys Val Ile Leu Thr
180 465                 470                 475                 480
181 Thr Arg Glu Val Ile Ser Gln Gln Val Ser Asp Lys His Leu Gln Glu
182                 485                 490                 495
183 Gly Arg Leu Tyr Pro Pro Leu Asn Thr Ile Arg Gly Val Ser Leu Lys
184             500                 505                 510
185 Ile Ala Val Lys Ile Val Gln Asp Ala Tyr Lys Glu Lys Met Ala Thr
186         515                 520                 525
187 Val Tyr Pro Glu Pro Gln Asn Lys Glu Glu Phe Val Ser Ser Gln Met
188     530                 535                 540
189 Tyr Ser Thr Asn Tyr Asp Gln Ile Leu Pro Asp Cys Tyr Pro Trp Pro
190 545                 550                 555                 560
191 Ala Glu Val Gln Lys Ile Gln Thr Lys Val Asn Gln
192                 565                 570
195 <210> SEQ ID NO: 3
196 <211> LENGTH: 564
197 <212> TYPE: PRT
198 <213> ORGANISM: homo sapiens polypeptide - ME3
200 <220> FEATURE:
201 <221> NAME/KEY: VARIANT
202 <222> LOCATION: 9, 18, 27, 55, 66, 88, 157, 199, 219, 305, 307, 323, 387,
203       519
204 <223> OTHER INFORMATION: Xaa = Any Amino Acid
206 <400> SEQUENCE: 3
W--> 207 Ile Lys Glu Lys Gly Lys Pro Leu Xaa Leu Asn Pro Arg Thr Asn Lys
208  1               5                  10                  15
W--> 209 Gly Xaa Ala Phe Thr Leu Gln Glu Arg Gln Xaa Leu Gly Leu Gln Gly
210             20                  25                  30
211 Leu Leu Pro Pro Lys Ile Glu Thr Gln Asp Ile Gln Ala Leu Arg Phe
212         35                  40                  45
W--> 213 His Arg Asn Leu Lys Lys Xaa Thr Ser Pro Leu Glu Lys Tyr Ile Tyr
```

RAW SEQUENCE LISTING DATE: 02/13/2006
PATENT APPLICATION: US/10/567,282 TIME: 12:47:48

Input Set : E:\9301-237-999.txt
Output Set: N:\CRF4\02132006\J567282.raw

```
     214     50                  55                  60
W--> 215 Ile Xaa Gly Ile Gln Glu Arg Asn Glu Lys Leu Phe Tyr Arg Ile Leu
     216 65                  70                  75                  80
W--> 217 Gln Asp Asp Ile Glu Ser Leu Xaa Pro Ile Val Tyr Thr Pro Thr Val
     218                 85                  90                  95
     219 Gly Leu Ala Cys Ser Gln Tyr Gly His Ile Phe Arg Arg Pro Lys Gly
     220             100                 105                 110
     221 Leu Phe Ile Ser Ile Ser Asp Arg Gly His Val Arg Ser Ile Val Asp
     222         115                 120                 125
     223 Asn Trp Pro Glu Asn His Val Lys Ala Val Val Val Thr Asp Gly Glu
     224     130                 135                 140
W--> 225 Arg Ile Leu Gly Leu Gly Asp Leu Gly Val Tyr Gly Xaa Gly Ile Pro
     226 145                 150                 155                 160
     227 Val Gly Lys Leu Cys Leu Tyr Thr Ala Cys Ala Gly Ile Arg Pro Asp
     228                 165                 170                 175
     229 Arg Cys Leu Pro Val Cys Ile Asp Val Gly Thr Asp Asn Ile Ala Leu
     230             180                 185                 190
W--> 231 Leu Lys Asp Pro Phe Tyr Xaa Gly Leu Tyr Gln Lys Arg Asp Arg Thr
     232 . . . .     195                 200                 205
W--> 233 Gln Gln Tyr Asp Asp Leu Ile Asp Glu Phe Xaa Lys Ala Ile Thr Asp
     234     210                 215                 220
     235 Arg Tyr Gly Arg Asn Thr Leu Ile Gln Phe Glu Asp Phe Gly Asn His
     236 225                 230                 235                 240
     237 Asn Ala Phe Arg Phe Leu Arg Lys Tyr Arg Glu Lys Tyr Cys Thr Phe
     238                 245                 250                 255
     239 Asn Asp Asp Ile Gln Gly Thr Ala Ala Val Ala Leu Ala Gly Leu Leu
     240             260                 265                 270
     241 Ala Ala Gln Lys Val Ile Ser Lys Pro Ile Ser Glu His Lys Ile Leu
     242         275                 280                 285
     243 Phe Leu Gly Ala Gly Glu Ala Ala Leu Gly Ile Ala Asn Leu Ile Val
     244     290                 295                 300
W--> 245 Xaa Ser Xaa Val Glu Asn Gly Leu Ser Glu Gln Glu Ala Gln Lys Lys
     246 305                 310                 315                 320
W--> 247 Ile Trp Xaa Phe Asp Lys Tyr Gly Leu Leu Val Lys Gly Arg Lys Ala
     248                 325                 330                 335
     249 Lys Ile Asp Ser Tyr Gln Glu Pro Phe Thr His Ser Ala Pro Glu Ser
     250             340                 345                 350
     251 Ile Pro Asp Thr Phe Glu Asp Ala Val Asn Ile Leu Lys Pro Ser Thr
     252         355                 360                 365
     253 Ile Ile Gly Val Ala Gly Ala Gly Arg Leu Phe Thr Pro Asp Val Ile
     254     370                 375                 380
W--> 255 Arg Ala Xaa Ala Ser Ile Asn Glu Arg Pro Val Ile Phe Ala Leu Ser
     256 385                 390                 395                 400
     257 Asn Pro Thr Ala Gln Ala Glu Cys Thr Ala Glu Glu Ala Tyr Thr Leu
     258                 405                 410                 415
     259 Thr Glu Gly Arg Cys Leu Phe Ala Ser Gly Ser Pro Phe Gly Pro Val
     260             420                 425                 430
     261 Lys Leu Thr Asp Gly Arg Val Phe Thr Pro Gly Gln Gly Asn Asn Val
     262         435                 440                 445
```

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 02/13/2006
PATENT APPLICATION: **US/10/567,282** TIME: 12:47:49

Input Set : **E:\9301-237-999.txt**
Output Set: **N:\CRF4\02132006\J567282.raw**

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; Xaa Pos. 9,18,27,55,66,88,157,199,219,305,307,323,387,519
Seq#:18; N Pos. 7,8

Invalid Line Length:
The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:5; Line(s) 372
Seq#:6; Line(s) 396

VERIFICATION SUMMARY DATE: 02/13/2006
PATENT APPLICATION: **US/10/567,282** TIME: 12:47:49

Input Set : **E:\9301-237-999.txt**
Output Set: **N:\CRF4\02132006\J567282.raw**

L:13 M:270 C: Current Application Number differs, Replaced Current Application Number
L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:207 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0
L:209 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:16
L:213 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:48
L:215 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:64
L:217 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:80
L:225 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:144
L:231 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:192
L:233 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:208
L:245 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:304
L:247 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:320
L:255 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:384
L:271 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:512
L:970 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:0